

A REVISION OF THE GENUS *ARCHICOLLINELLA* DUDA
(DIPTERA: SPHAEROCERIDAE: LIMOSININAE)

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Abstract.—The subgenus *Leptocera* (*Archicollinella*) Duda is revised and elevated to generic status. Three species are recognized: *Archicollinella caerulea* (Duda) from Chile and Peru; *Archicollinella dolichoptera* (Richards) from Chile and Peru; and *Archicollinella penteseta* (Richards) **new combination** from Great Britain. *Leptocera phycophila* Richards is a **junior synonym** of *Archicollinella caerulea*. All species are described and a key to the species is provided. The taxonomic status of *Leptocera longipennis* Duda is discussed and the species is considered **incertae sedis**. Lectotypes are designated for *Archicollinella caerulea* and *Leptocera longipennis*.

Key Words: Sphaeroceridae, Limosininae, *Archicollinella*, systematics

The genus *Archicollinella* Duda includes three species similar in both habitus and habitat to the sphaerocerid genus *Thoracochaeta* Duda. Both genera are found in marine algae deposited in the supralittoral zone (wrack), and most samples in which specimens of *Archicollinella* are present also include *Thoracochaeta* in large numbers. Although the two genera have been confused in the past, they are not closely related and can be most easily distinguished by the number and arrangement of dorsocentral bristles. *Thoracochaeta* has four pairs of dorsocentral bristles, with the anterior pair inclinate, whereas *Archicollinella* has three pairs, all reclinate.

Genera which resemble *Archicollinella* in possessing three pairs of dorsocentral bristles include *Phthitia* Enderlein (= *Kimosina* Roháček), *Opacifrons* Duda, and *Pseudocollinella* Duda. *Archicollinella* differs from these and other similar genera in having two large katapisternal bristles, a row of stout

bristles near the anteromedial margin of pedicel, and in the relatively anterior placement of the first pair of dorsocentral bristles (located approximately midway between the anterior margin of the scutum and the transverse suture).

The purpose of this paper is to formalize the elevation of *Archicollinella* from subgeneric to generic status, and to provide complete descriptions for its constituent species, including the previously unknown male of *Archicollinella penteseta* (Richards) (new combination). Two of the three species of *Archicollinella*, *A. caerulea* (Duda) and *A. dolichoptera* (Richards), are relatively common in seaweed along the Pacific coast of South America from Peru to southern Chile. The third species, *A. penteseta*, is known only from two localities in Great Britain. These three species form a closely related, clearly monophyletic group, without clear affinities to other limosinine genera.

Morphological terminology used in species descriptions follows McAlpine (1981) with the exception of the chaetotaxy of the head, which follows Roháček (1982). Morphological abbreviations used in the descriptions are as follows: *a*—anterior setae; *ac*—acrostichal setae; *ad*—anterodorsal setae; *ads*—additional orbital setulae; *av*—anteroventral setae; C2—second costal sector (R_1 – R_{2+3}); C3—third costal sector (R_{2+3} – R_{4+5}); *d*—dorsal setae; *dc*—dorsocentral setae; *ifr*—interfrontal setae; *oc*—ocellar setae; *occe*—external occipital setae; *occi*—internal occipital setae; *ors*—orbital setae; *p*—posterior setae; *poc*—postocellar setae; *pvt*—postvertical setae; *v*—ventral setae; *vte*—external vertical setae; *vti*—internal vertical setae.

Sources of material and collection abbreviations used in the paper are as follows: BMNH—British Museum (Natural History), London, England; CAS—California Academy of Sciences, San Francisco, CA, USA; CNC—Canadian National Collection of Insects, Biosystematics Research Centre, Ottawa, Canada; GUE—University of Guelph, Guelph, Ontario, Canada; SMTD—Staatliches Museum für Tierkunde, Dresden, Germany.

Genus *Archicollinella* Duda

Archicollinella Duda 1925: 64 (as subgenus of *Leptocera* Olivier). Type species: *Leptocera caerulea* Duda (subsequent designation by Richards, 1930: 296).

Schnuseella Duda 1925: 64 (as subgenus of *Leptocera* Olivier) (nomen nudum).

Generic diagnosis.—Limosiniinae with well-developed facial tubercle and protruding lower facial margin. Thorax with 3 pairs (1 presutural, 2 postsutural) of *dc*, 4 marginal scutellar setae. Mid-tibial chaetotaxy: proximal third with short *ad*, longer *pd*; 1 long *ad* at midpoint; distal third with 1 long *ad*, 1 long *pd*; 1 apicoventral; 1 small anterior apical bristle in both sexes. Additionally, male mid-tibia with distal ventral patch

of short setae that mesh with patch on femur, female mid-tibia with 1 mid-*v*. Mid-basitarsus of both sexes with short mid-*v*. Male genitalia with prominent, bare, posteroventrally curved ventral cercal projections.

Generic description.—Body length 1.8–2.5 mm. Frons with 4 pairs of *ifr*, first pair short, proclinate, subsequent pairs progressively more inclinate; 1–4 pairs of minute, proclinate additional interfrontal setulae lateral to anterior *ifr*; *oc*, *vte*, *vti*, *occe*, *occi* strong, *poc* divergent, *pvt* short cruciate, 2 pairs of strong *ors*, 3–4 pairs of *ads* anteromedial to *ors*. Facial tubercle well-developed between antennal bases; facial carina and protruding lower facial margin delimiting well-defined antennal foveae; vibrissae shorter than or equal to *ors*, sub-vibrissal setae about half as long as vibrissae. Gena with 1 long, 1 short upturned seta anteriorly, long seta almost as long as vibrissae, 4–6 marginal ventral genal setulae present; eye height 1.3–1.6 times genal height. Antennae with arista short pubescent, shorter than or equal to anterior-posterior length of head. Scutum with 3 pairs (1 presutural, 2 postsutural) of *dc*, presutural *ac* in 6–8 rows, one pair of prescutellar *ac* longer than other pairs of *ac*. Postpronotum with 1 long inclinate inner bristle, 1 long reclinate outer bristle, 1 short anterior bristle. Scutellum same colour as scutum, wider than long, bare dorsally, with 4 marginal setae. Katepisternum with 2 long *d*, the posterior one slightly longer, 1 seta near centre shorter than dorsal setae, several fine ventral setae. Mid-trochanter with 1 small *a*, 1 small *av*, mid-femur with 4 preapical setae, 2 *ad*, 1 *av*, 1 *p*. Proximal end of femur in male with dense ventral patch of short, stout setae (Fig. 1). Male mid-tibial chaetotaxy: proximal third with short *ad*, longer *pd* distal to this, 1 long *ad* at midpoint, distal third with 1 long *ad*, 1 long *pd*, distal ventral region with patch of short, stout setae, 1 short apicoventral bristle (Figs. 1, 2). Female mid-tibial chaetotaxy: proximal third with long *ad*, longer *d* distal to

this, 1 long *ad* at midpoint, distal third with 1 long *ad*, 1 long *pd*; 1 mid-*v*, 1 long apicoventral seta (Figs. 3, 4). Mid-basitarsus in both sexes with short mid-*v*. Wings sexually dimorphic, length-width ratio 2.3–2.7 in male (Fig. 5), 2.7–3.1 in female (Fig. 6); costal ratio (C2:C3) 1.5–2.1; C ending at wing apex, surpassing R_{4+5} by 2–4 times width of vein; C2 dorsally with double row of short dark setae, shorter and sparser distally, dorsal seta on humeral crossvein at or near junction with C; R_{2+3} slightly curved distally, R_{4+5} straight; cell d posteriorly angulate, long appendiculate; anal vein long, extending nearly to wing margin; alula narrow. Halter yellow. Abdominal tergites very sparsely haired, 4–5 long hairs near posterolateral margins. Sternites narrow, sparsely covered with long hairs.

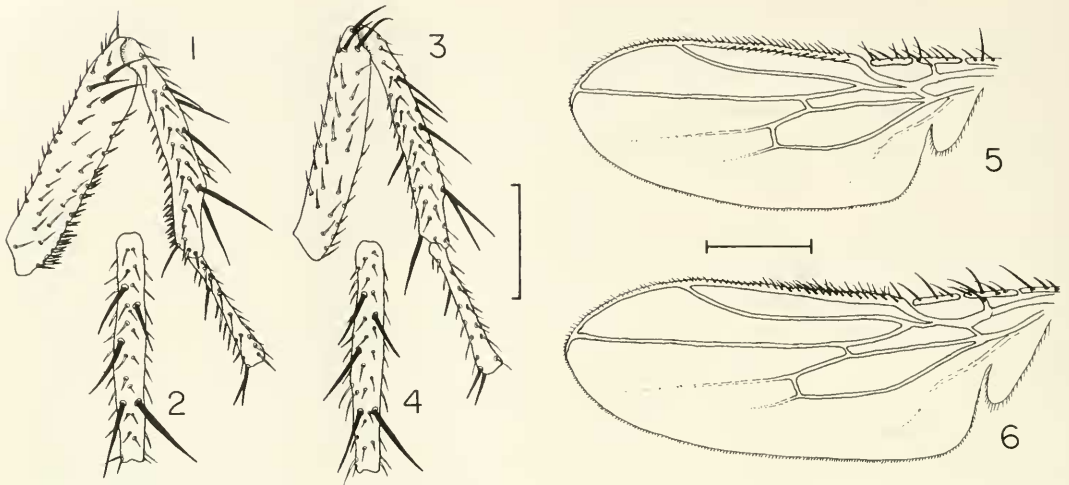
Male genitalia.—Posterior margin of sternite 5 straight or convex, sparsely setose overall, posteromedial setae denser (Fig. 12). Synsternite 6+7 with bifid ventral extension under posterior margin of sternite 5, anterior branch expanded on dextral end, posterior branch extending dextrally almost as far as expansion of anterior branch (Fig. 21), synsternite narrowly fused dorsally to sternite 8. Epandrium setulose, with long setae overall, setae longer ventrally (Fig. 8); cerci separated from epandrium by distinct suture, cerci ventrally with bare, polished, curved ventral cercal projections (Figs. 7, 8); sub-anal plate very narrow medially. Hypandrium tripartite, median segment an elongate triangular or hexagonal plate, hyaline laterally, more heavily sclerotized medially, posterolateral segments small, more darkly sclerotized, articulated but not fused to epandrium (Fig. 11). Sternite 10 small. Surstylus a ventrally elongate triangle (Fig. 10), articulating with epandrium and sternite 10 (Fig. 7). Paramere robust, broadly rounded or pointed ventrally, with anterior concavity near midpoint, with small additional sclerite (suspensory sclerite) projecting ventrally from upper edge of concavity, articulating with posterolateral corner of

hypandrium (Fig. 9). Aedeagal apodeme stout. Distiphallus with several rows of small denticulate projections, dorsal sclerites narrow, pointed, joined at basal region of distiphallus by dorsal and ventral arches, forming a complete ring; basiphallus slightly dilated at both ends, more heavily sclerotized dorsally (Fig. 9). Ejaculatory apodeme small.

Female genitalia.—Sternite 7 straight or broadly rounded posteriorly. Tergite 8 tripartite, median portion pale, roughly oval, lateral portions darker, wider ventrally, setulose with sparse long setae (Fig. 13); sternite 8 roughly rectangular, pale, setulose (Fig. 15). Epiproct small, flat or concave dorsally, setulose, with 2 long setae. Cerci longer than wide, not fused to epiproct, densely setulose, with 4–6 long apical, dorsal, and lateral setae. Hypoproct pale, broader than long, fine setulose, with short setae posteriorly. Internal vaginal sclerotization (spectacles-shaped sclerite) hyaline, indistinct. Three (2+1) spermathecae present, subquadrate, with two pronounced lateral invaginations, almost meeting in centre, spermathecae swollen at insertion of duct, sclerotized portion of ducts short (Fig. 14).

KEY TO THE SPECIES OF *ARCHICOLLINELLA* DUDA

1. Males with posterior margin of sternite 5 broadly rounded, deflected ventrally, parameres broadly rounded in distal half. Female sternite 7 rounded posteriorly and sternite 8 broader than long *caerulea* (Duda)
 - Males with posterior margin of sternite 5 straight, not deflected ventrally, parameres sharply pointed in distal half. Female sternite 7 straight posteriorly, if broadly rounded posteriorly, then sternite 8 much longer than broad 2
2. Males with parameres extending ventrally beyond ventral end of surstyli (Fig. 17), surstyli narrowed apically, with 9–12 lateral setae. Female sternite 7 straight posteriorly, sternite 8 broader than long *dolichoptera* (Richards)
 - Males with parameres extending ventrally only to ventral end of surstyli (Fig. 26), surstyli rounded or spatulate apically, with 4–8 lateral setae. Female sternite 7 broadly rounded posteriorly, sternite 8 much longer than broad *penteseta* (Richards)



Figs. 1-6. *Archicollinella caerulea* (Duda). 1. Male mid-femur, tibia, and basitarsus, anterior. 2. Male mid-tibia, dorsal. 3. Female mid-femur, tibia, and basitarsus, anterior. 4. Female mid-tibia, dorsal. Scale bar = 0.25 mm. 5. Male wing, dorsal. 6. Female wing, dorsal. Scale bar = 0.5 mm.

Archicollinella caerulea (Duda)

(Figs. 1-15)

Leptocera (*Archicollinella*) *caerulea* Duda 1925: 65.

Leptocera (*Archicollinella*) *coerulea* (Duda), Richards, 1931: 62 (lapsus).

Archicollinella caerulea (Duda), Marshall and Smith, 1991.

Leptocera (*Limosina*) *phycophila* Richards 1963: 241 (syn. Marshall and Smith 1991).

Kimosina phycophila (Richards), Roháček, 1983: 116.

Description.—With characters of the genus as defined above. Body length 2.0–2.4 mm. Frons reddish-brown anteriorly, black posteriorly, gray pruinose; *ifr* approximately equal in length, 3–4 pairs of minute, proclinate additional interfrontal setulae lateral to anterior *ifr*; *poc* half as long as *oc*, *pvt* slightly shorter than *poc*. Face dark brown, gray pruinose; vibrissae relatively short. Gena reddish-brown, gray pruinose except for reddish-brown triangle anteroventral to eye; eye height about 1.3 times genal height. Scape and pedicel light brown, sparsely gray pruinose; first flagellomere light brown, pu-

bescent; arista about as long as head. Scutum dark brown, gray pruinose; presutural *ac* in 8 rows, one pair of prescutellar *ac* about twice as long as remaining pairs. Thoracic pleurites brown-black, gray pruinose, sutures yellow. Legs light brown, sparsely gray pruinose, coxae, trochanters, and tarsi yellowish-brown. Wing membrane milky, light fuscous; length–width ratio 2.5–2.7 in male, 3.0–3.1 in female; costal ratio (C2:C3) 1.6–2.1 (Figs. 5, 6). Abdominal tergites black-brown, gray pruinose. Sternites narrow, same colour as tergites.

Male genitalia.—Posterior margin of sternite 5 rounded, with dense long setae (Fig. 12), posterior margin of sternite strongly deflected ventrally. Anterior branch of bifid extension of synsternite 6+7 with two oblique bands extending ventromedially, articulating with inner surface of posteromedial margin of sternite 5 (Fig. 12). Cerci broadly rounded, setulose, with 1 long, 2–3 short setae; sub-anal plate very narrow medially (Fig. 7). Hypandrium with median portion broadly triangular, more heavily sclerotized medially, and posterolateral plates small, rounded, more darkly sclero-

tized (Fig. 11). Sternite 10 swollen in dorsal region of arms (Fig. 7). Surstylus narrowed ventrally, slightly deflected laterally in ventral half, with one stout posterior seta at point of deflection, several scattered lateral setulae, 5–7 medial setulae ventrally (Fig. 10). Paramere broadly rounded ventrally, except for small, dark ventral point, upper portion of paramere curved anteriorly to articulation with aedeagal apodeme. Aedeagal apodeme sharply deflected ventrally in anterior half (Fig. 9).

Female genitalia.—Sternite 7 broadly rounded posteriorly. Tergite 8 with median portion bare, pale, roughly oval, lateral portions darker (Fig. 13); sternite 8 roughly rectangular, broader than long, very pale, bare laterally, fine setulose medially, with 2 very short, 2 slightly longer setulae (Fig. 15). Epiproct small, pale, concave dorsally, with narrow posteromedial invagination extending approximately halfway to anterior margin, epiproct fine setulose, with 2 long setae (Fig. 13). Hypoproct very pale, slightly smaller than sternite 8, rounded posteriorly, fine setulose, with 4–6 setulae posteriorly (Fig. 15). Lateral invaginations of each spermatheca unequal in size, one markedly longer and wider (Fig. 14).

Type material.—*L. caerulea*: Lectotype (here designated): ♂ in SMTD collection labelled “Chile, Antofagasta, O. Garlep, c.” [green]; “Coll. W. Schnuse. 1911–3” [green]; “*A. caerulea* ♂ det. Dr. O. Duda” [white]; “Typus” [red]; “Lectotype *Archicollinella caerulea* des. Marshall manuscript 1985” [yellow]. 5 paralectotypes (3 ♂, 2 ♀): same collection data as lectotype (SMTD).

L. phycophila: Holotype (♂): CHILE, Santiago, El Tabo, on seaweed, 12.v.1961, G. Kuschel (BMNH). Allotype (♀) and 9 paratypes (5 ♂, 4 ♀): same data as holotype; 3 ♂ paratypes: PERU, Lima, NW Caneto, at sea level, 13.ix.1954. Schlinger & Ross (allotype, 8 paratypes in BMNH, 2 paratypes in CAS).

Other material examined.—CHILE, Antofagasta, La Portada Beach, 23°31' S,

70°27' W, 20.viii.1966, Schlinger & Irwin (73 ♂, 148 ♀, CAS); Santiago, El Tabo, 23.i.1957, L. E. Pena (95 ♂, 211 ♀, CNC); Caldera, 25–27.iv.1956 (11 ♂, 3 ♀, CNC); Niebla, 17 km W Valdivia, wrack on Playa Chica, 15.xi.1989, S. A. Marshall (42 ♂, 17 ♀, GUE); Niebla, 15 km W Valdivia, wet wrack on beach and upper beach pan, 14–15.xi.1989, S. A. Marshall (26 ♂, 10 ♀, GUE).

Distribution.—Chile, Peru.

Comments.—Although the lectotype of *Leptocera caerulea* was labelled as such in 1985, this act in itself does not constitute lectotype designation (ICZN 1985, Article 72b [vii]). Thus, the lectotype of *L. caerulea* is fixed in the present publication.

Archicollinella dolichoptera (Richards)

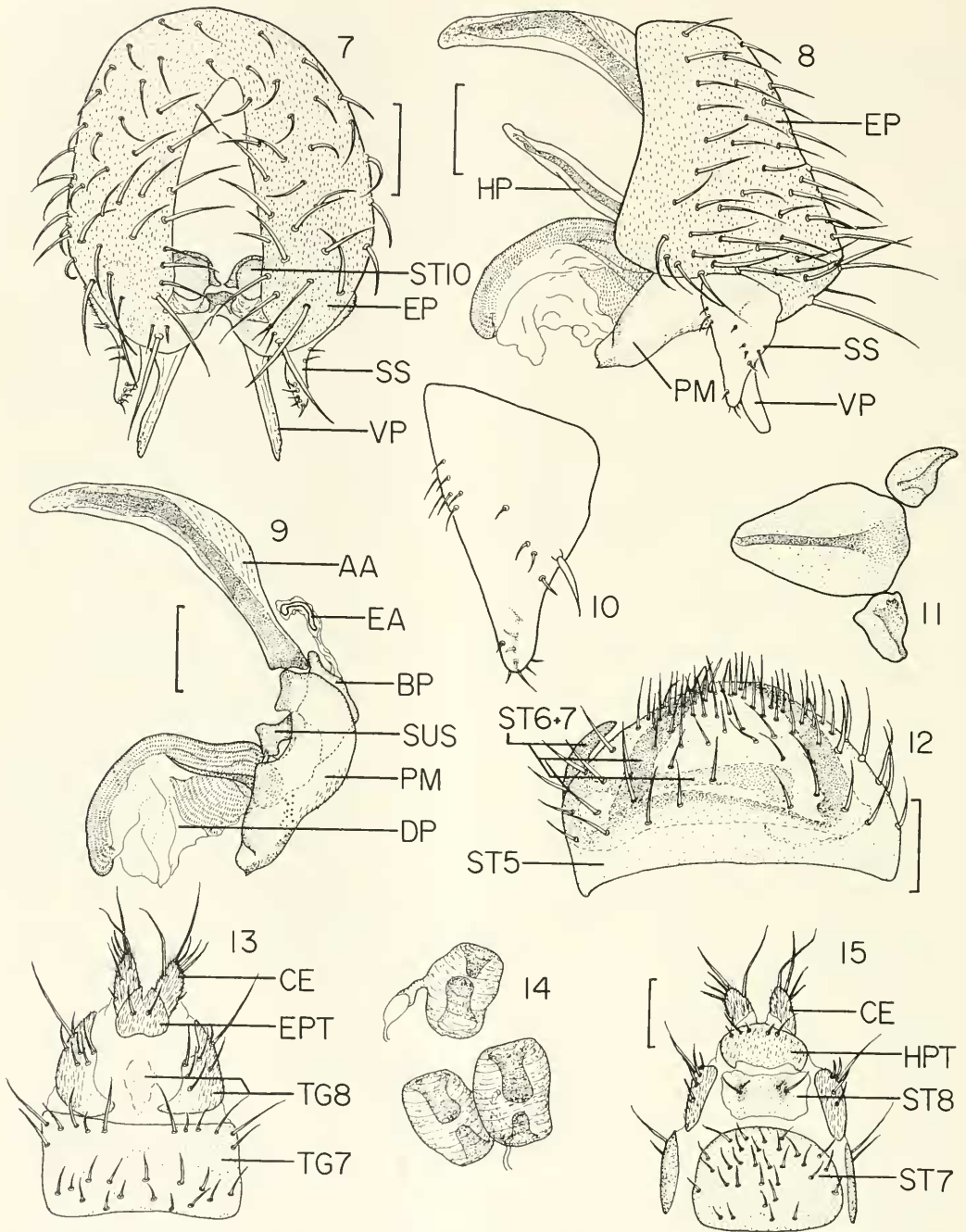
(Figs. 16–24)

Leptocera (*Limosina*) *dolichoptera* Richards 1963: 240.

Kimosina dolichoptera (Richards), Roháček, 1983: 116.

Archicollinella dolichoptera (Richards), Marshall and Smith, 1991.

Description.—With characters of the genus as defined above. Body length 1.8–2.3 mm. Frons yellow anteriorly, light brown posteriorly; first pair of *ifr* short, remaining pairs almost twice as long; 1–2 pairs of minute additional interfrontal setulae lateral to anterior *ifr*; *poc* half as long as *oc*, *pvt* slightly shorter than *poc*. Face light brown, pruinose; facial tubercle developed but small; vibrissae about as long as *ors*. Gena yellow, light brown pruinose, eye height about 1.6 times genal height. Scape and pedicel yellow-brown; first flagellomere light brown, pubescent; arista about as long as head. Scutum light brown, lightly pruinose; presutural *ac* in 6 rows, stout and short; 1 pair of prescutellar *ac* longer than remaining pairs. Thoracic pleurites yellow-brown, anepisternum, anepimeron darker brown. Legs yellow-brown. Wing membrane slightly milky, very light fuscous; length–width ratio 2.3–2.6 in male, 2.6–2.9 in female; costal ratio (C2:C3) 1.5–1.8. Abdominal



Figs. 7-15. *Archicollinella caerulea* (Duda). 7. Male genitalia, posterior. 8. Male genitalia, left lateral. 9. Male aedeagal complex, left lateral. 10. Male surstylus, left lateral. 11. Male hypandrium, ventral. 12. Male sternite 5 and synsternite 6+7, ventral. 13. Female terminalia, dorsal. 14. Female spermathecae. 15. Female terminalia, ventral. AA, aedeagal apodeme; BP, basiphallus; CE, cercus; DP, distiphallus; EA, ejaculatory apodeme; EP, epandrium; EPT, epiproct; HP, hypandrium; HPT, hypoproct; PM, paramere; SS, surstylus; ST, sternite; SUS, suspensory sclerite; TG, tergite; VP, ventral cercal projection. Scale bars = 0.1 mm

tergites dark brown, shining. Sternites narrow, same colour as tergites.

Male genitalia.—Fifth sternite with straight posterior margin, not deflected posteroventrally, sparsely setose overall, posteromedial setae shorter, slightly denser (Fig. 21). Anterior branch of bifid extension of synsternite 6+7 with very pale oblique ventromedial bands (Fig. 21). Cerci slightly convex, setulose, with 1 long, 2–3 short setae; subanal plate very narrow medially (Fig. 16). Hypandrium with medial portion an elongate hexagon, more heavily sclerotized medially, posterolateral portions roughly triangular (Fig. 20). Sternite 10 small, arms narrow dorsally (Fig. 16). Surstylus narrowed ventrally, with 9–12 long, lateral setae on rounded projection in upper half, 4–5 shorter medial setae ventral to these (Fig. 19). Paramere extending ventrally beyond ventral end of surstylus (Fig. 17), sharply pointed ventrally, wider dorsally, upper portion of paramere bent anteriorly, articulating with aedeagal apodeme. Aedeagal apodeme broadly curved ventrally in anterior half (Fig. 18).

Female genitalia.—Sternite 7 with straight posterior margin (Fig. 24). Tergite 8 with median portion bare, pale, roughly oval, lateral portions darker (Fig. 22); sternite 8 same colour as sternite 7, rectangular, broader than long, setulose, with posterior row of 4 short, strong setae (Fig. 24). Epiproct flat, slightly wider than long, setulose except for bare, posteromedial indentation, with 2 long setae (Fig. 22). Hypoproct pale, a narrow transverse strip, setulose, with 6–8 short setae (Fig. 24). Lateral invaginations of each spermatheca approximately equal in size (Fig. 23).

Type material.—Holotype (♂): PERU, Lima, NW Caneto, at sea level, 13.ix.1954, Schlinger & Ross (CAS). Allotype (♀) and 9 paratypes (7 ♂, 2 ♀): same data as holotype (allotype, 5 paratypes in CAS, 4 paratypes in BMNH).

Other material examined.—CHILE, Antofagasta, La Portada Beach, 23°31'S,

70°27'W, 20.viii.1966, Schlinger and Irwin (4 ♂, 8 ♀, CAS); Magallanes, 3.xi.1955, L. E. Pena (5 ♂, 9 ♀, CNC).

Distribution.—Peru, Chile.

Comments.—The specimens from Chile are morphologically distinct from the type series from Peru. The Chilean specimens have a yellow scutum, with the *dc* and *ac* shorter and stouter than in the types. There are no discernible differences in the genitalia or other characters; the two forms probably represent geographic variation within the species.

Archicollinella penteseta (Richards),

NEW COMBINATION

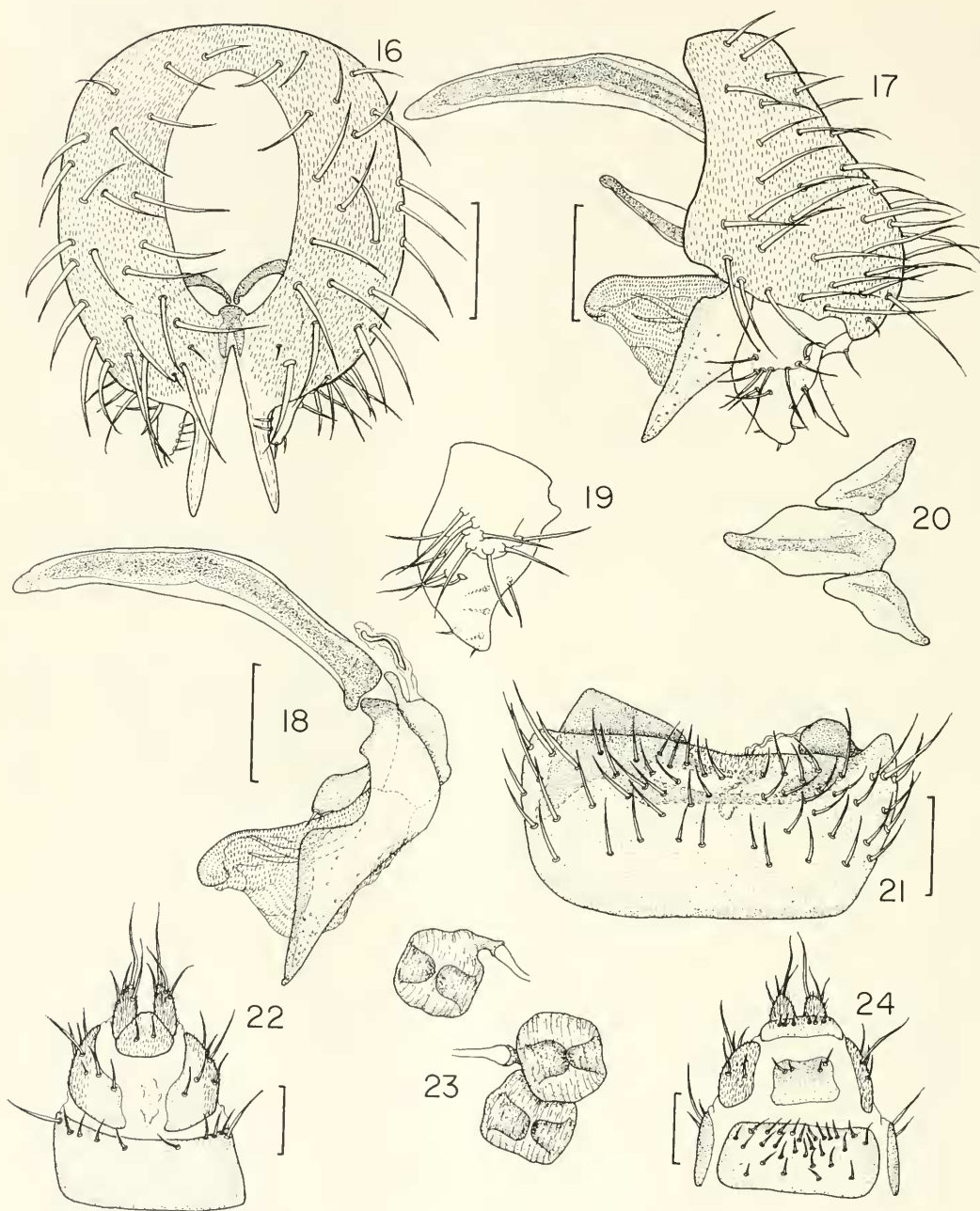
(Figs. 25–33)

Leptocera (*Thoracochoaeta*) *penteseta* Richards 1929: 174.

Thoracochoaeta penteseta (Richards), Papp, 1984: 85.

Description.—With characters of the genus as defined above. Body length 2.0–2.5 mm. Frons yellow-brown anteriorly, light brown posteriorly; first pair of *ifr* short, remaining pairs progressively longer; 1–2 pairs of minute additional interfrontal setulae lateral to anterior *ifr*; *oc*, *vte*, *vti* strong, *occe*, *occi* weaker and shorter, *poc* weakly developed, *pvt* minute. Face light brown, pruinose; vibrissae longer than *ors*. Gena light brown, pruinose; eye height about 1.5 times genal height. Scape and pedicel light brown; first flagellomere light brown, pubescent; arista slightly shorter than head. Scutum medium brown, gray pruinose; presutural *ac* in 6 rows. Thoracic pleurites same colour as scutum. Legs yellow-brown, femora slightly darker. Wing membrane slightly milky, very light fuscous; length–width ratio 2.5 in male, 2.7–2.9 in female; costal ratio (C2:C3) 1.7–2.0. Abdominal tergites dark brown, shining. Sternites narrow, same colour as tergites.

Male genitalia.—Fifth sternite with straight posterior margin, not deflected posteroventrally, sparsely setose overall, pos-



Figs. 16-24. *Archicollinella dolichoptera* (Richards). 16. Male genitalia, posterior. 17. Male genitalia, left lateral. 18. Male aedeagal complex, left lateral. 19. Male surstylus, left lateral. 20. Male hypandrium, ventral. 21. Male sternite 5 and synsternite 6+7, ventral. 22. Female terminalia, dorsal. 23. Female spermathecae. 24. Female terminalia, ventral. Scale bars = 0.1 mm.

teromedial setae shorter and denser (Fig. 30). Anterior branch of bifid extension of synsternite 6+7 with two oblique bands extending ventromedially, articulating with inner surface of posteromedial margin of sternite 5 (Fig. 30). Cerci slightly convex, setulose, with 1 long, 1–2 short setae; subanal plate very narrow medially (Fig. 25). Hypandrium with medial portion elongate, more heavily sclerotized medially, posterolateral portions roughly triangular (Fig. 29). Sternite 10 small, arms narrow dorsally (Fig. 25). Surstylus broadly rounded ventrally, slightly curved laterally in ventral half, with 4–8 long, lateral setae in upper half, several short, medial setae in ventral half (Fig. 28). Paramere extending ventrally as far as ventral extremity of surstylus, sharply pointed ventrally, wider dorsally, upper portion of paramere articulating with aedeagal apodeme. Aedeagal apodeme broadly curved ventrally in anterior half (Fig. 27).

Female genitalia.—Sternite 7 with rounded posterior margin (Fig. 33). Tergite 8 with median portion pale, roughly oval, lateral portions darker (Fig. 31); sternite 8 same colour as sternite 7, much longer than broad, setulose, with 4 short lateral setae (Fig. 33). Epiproct flat, slightly wider than long, with deep, narrow, posteromedial indentation, pale, setulose, with 2 long setae (Fig. 31). Hypoproct pale, broader than long, setulose, with 8–10 short setae (Fig. 33). Lateral invaginations of each spermatheca unequal in size, one markedly longer and wider (Fig. 32).

Type material.—Holotype (♀): ENGLAND, Scilly Islands, Corregan, in nest of cormorant, 12.vii.1927, O. W. Richards (BMNH).

Other material examined.—ENGLAND, Newcastle, 15.vii.1946, G. O. Varley, on hides (1 ♂, 3 ♀, BMNH).

Distribution.—Great Britain (see comments).

Comments.—The type specimen (examined in September 1989) is extensively damaged, with the head and abdomen miss-

ing. However, four other specimens in the British Museum collection were compared to the type and found to be conspecific.

The apparent rarity of this species in Britain, and the known distribution of the other species of *Archicollinella*, suggest that *A. penteseta* may be native to South America, with the species being introduced by sea to the British Isles. Sampling of supralittoral habitats on the east coast of South America may result in additional material of this species.

Richards initially assigned *L. penteseta* to the subgenus *Thoracochaeta*, despite the fact that the first dorsocentral bristles are not inclinate. Pitkin (1988: 42) noted this, and although he suggested that the species belongs in a separate genus, retained *penteseta* in *Thoracochaeta*.

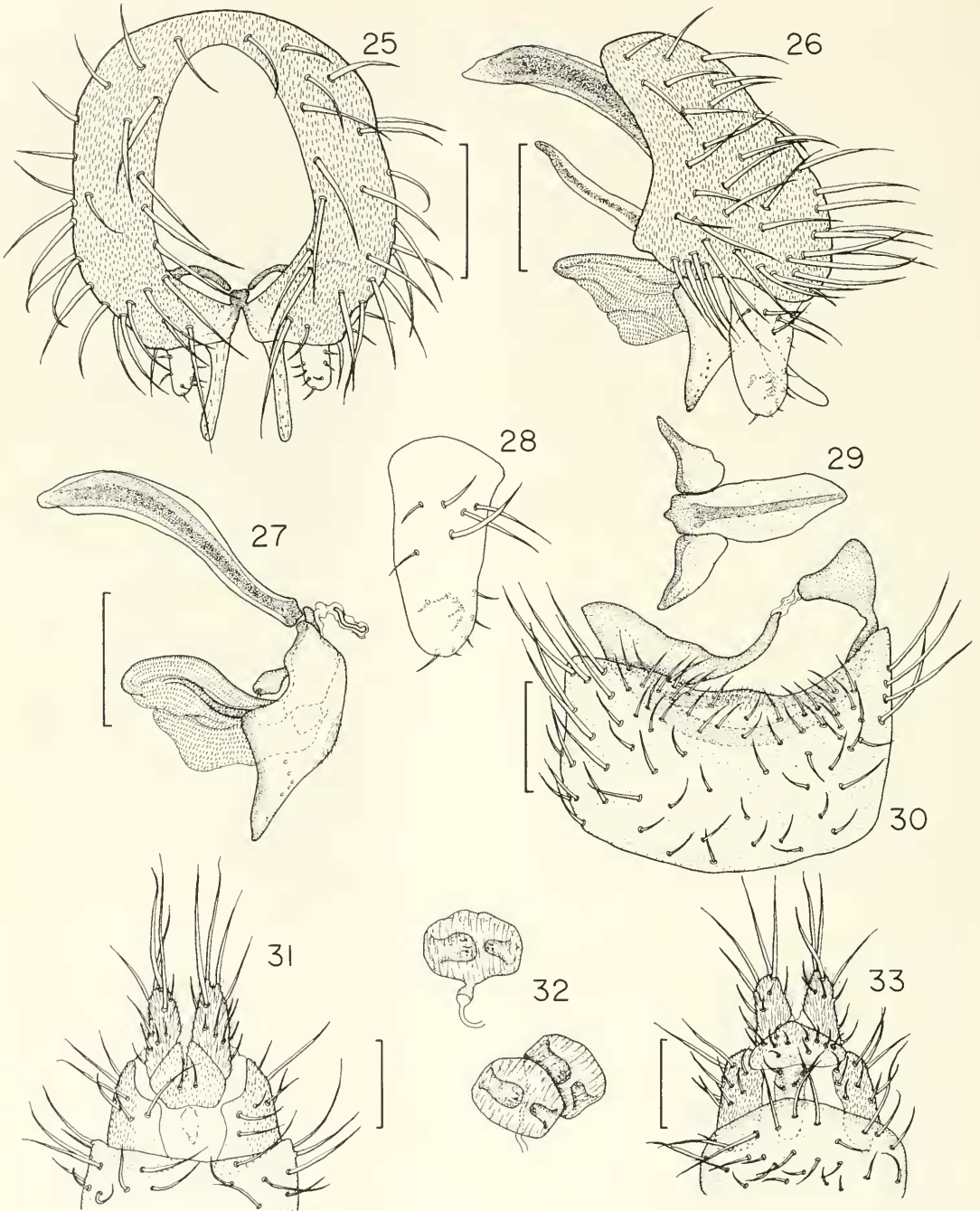
Leptocera longipennis Duda

Leptocera (*Scotophilella*) *longipennis* Duda 1925: 178.

Type material.—Lectotype (here designated): ♂ in SMTD collection labelled “Bolivia-Guaqui, 30.v.03. Titicaca-See” [green]; “*Scotophilella longipennis* n.sp. type. ♂ det. Dr. O. Duda” [white]; “Typus” [red]; “Lectotype *Scotophilella longipennis* des. Marshall manuscript 1985” [yellow]. Paralectotype (♀) “Bolivia-Guaqui, 28.v.03, Titicaca-See” (SMTD).

Comments.—Although the lectotype of *Leptocera longipennis* was labelled as such in 1985, this act in itself does not constitute lectotype designation (ICZN 1985, Article 72b [vii]). Thus, the lectotype of *L. longipennis* is fixed in the present publication.

Richards (1963) assigned *L. phycophila* (= *A. caerulea*), *L. dolichoptera*, and *L. longipennis* to a distinct group within *Leptocera* (*Limosina*), based on the small eyes, short arista, and long wings with well-developed costal bristles. These characters, along with head and thoracic chaetotaxy, also prompted Richards to suggest a relationship between these species and *Thora-*



Figs. 25-33. *Archicollinella penteseta* (Richards). 25. Male genitalia, posterior. 26. Male genitalia, left lateral. 27. Male aedeagal complex, left lateral. 28. Male surstylus, left lateral. 29. Male hypandrium, ventral. 30. Male sternite 5 and synsternite 6+7, ventral. 31. Female terminalia, dorsal. 32. Female spermathecae. 33. Female terminalia, ventral. Scale bars = 0.1 mm.

cochaeta. Such characters, however, are probably convergent adaptations in response to living in decaying seaweed. *Leptocera longipennis* is not a marine shore species, but it is known only from the shores of Lake Titicaca.

The only available male specimen of *L. longipennis* is pale and damaged. The details of the genitalia are difficult to discern, but they are superficially similar to those of *Archicollinella*. Sternite 5 has a straight posterior margin and is densely setose over a large posteromedial area and the cerci have long, posteroventrally curved projections. The paramere and distiphallus are similar in shape to those of *Archicollinella*, but the distiphallus does not appear to be densely spinulose. The surstylus is short and quadrate in contrast to the more elongate surstylus of *Archicollinella*. The hypandrium is greatly reduced and apparently fused to the epandrium, and is not tripartite, and synsternite 6+7 is simple, with only a single ventral ramus.

Several external characters also suggest that *L. longipennis* cannot be accommodated in *Archicollinella*. Although both type specimens have the scutum pierced by a minute pin, and are largely de-bristled, there appear to be only two pairs of *dc*, both post-sutural. The male mid-tibial chaetotaxy is quite different, with one *pd* in the proximal third, one *pd* at the midpoint, and one short *ad*, one long *ad*, and one long *pd* in the distal third.

The generic placement of *L. longipennis* remains unknown pending the examination of additional specimens. For the present, *L. longipennis* is considered a species incertae sedis.

DISCUSSION

Duda (1925) proposed the subgenus *Leptocera* (*Archicollinella*) to accommodate the newly described species *Leptocera caerulea* Duda as well as *Limosina septentrionalis* Stenhammar. Previously, however, Duda (1924) had erected the subgenus *Pseudo-*

collinella for *L. septentrionalis*, thus rendering *Archicollinella* a junior subjective synonym of *Pseudocollinella*. Hackman (1968) listed *Archicollinella* and *Pseudocollinella* as junior synonyms of *Opacifrons* Duda. However, *Opacifrons*, *Pseudocollinella*, and *Archicollinella* are now considered separate genera and *Archicollinella* remains an available generic name for *Leptocera caerulea* Duda.

In his discussion of *Archicollinella*, Duda (1925) noted that he had previously proposed the subgenus *Schnuseella* to accommodate *Leptocera caerulea* (despite the fact that the species was not previously described). There appears to be no other reference to *Schnuseella* in the literature; it is probably an unpublished manuscript name. Consequently, *Schnuseella* is considered a nomen nudum.

A number of possible relationships between *Archicollinella* and other taxa have been suggested. Duda (1925) considered *Archicollinella caerulea* representative of an "ancestral form," with characters transitional between *Scotophilella* Duda (= *Limosina* Macquart) and *Leptocera*. Roháček (1983) transferred *L. phycophila* and *L. dolichoptera* to the newly proposed genus *Kimosina* Roháček, based largely on chaetotaxic characters, but did not assign them to a subgenus pending examination of the postabdominal morphology. Roháček noted that *L. phycophila* and *L. dolichoptera* resemble *Kimosina* (*Alimosina*) *empirica* (Hutton) in characters of the female cerci and in having sexually dimorphic wing shape. However, the two species lack the modified abdominal sternites that characterize *empirica*, and, according to Roháček, might represent an additional subgenus of *Kimosina*. Marshall and Smith (1991) redefined *Phthitia* (= *Kimosina*) and rejected a close relationship between *Archicollinella* and *Phthitia*.

At present, the affinities of *Archicollinella* are still speculative. Male surstylar morphology, female sternite 8, and several other

characters preclude placement of the species in *Leptocera* or *Phthitia*, as suggested by previous authors. A number of characters, both genitalic and chaetotaxal, distinguish *Archicollinella* from *Thoracochoeta*. Most of the defining characters of *Archicollinella* (e.g. morphology of hypandrium, synsternite 6+7, cercal projections, spermathecae) are clearly apomorphic, but difficult to homologize in other genera. Other diagnostic characters (surstyli, parameres, chaetotaxal characters) are either plesiomorphic or subject to frequent homoplasy in the Limosininae. Further clarification of the generic relationships between *Archicollinella* and other limosinine genera will await a broad treatment of the phylogeny of the Limosininae as a whole.

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LITERATURE CITED

- Duda, O. 1924. Berichtigungen zur Revision der europäischen Arten der Gattung *Limosina* Macq. (Dipteren), nebst Beschreibung von sechs neuen Arten. Verhandlungen der Zoologisch-Botanischen Gesellschaft in Wien 73(1923): 163-180.
- . 1925. Die aussereuropäischen Arten der Gattung *Leptocera* Olivier = *Limosina* Macquart

- (Dipteren) mit Berücksichtigung der europäischen Arten. Archiv für Naturgeschichte 90A(II)(1924): 5-215.
- Hackman, W. 1968. On the subgenus *Opacifrons* Duda of the genus *Leptocera* Olivier (Diptera, Sphaeroceridae) with a description of a new species from northern Fennoscandia. Notulae Entomologicae 48: 40-44.
- ICZN. 1985. International Code of Zoological Nomenclature. Third Edition. International Trust for Zoological Nomenclature. 338 pp.
- Marshall, S. A. and I. P. Smith. 1991. A revision of the New World and Pacific *Phthitia* Enderlein (Diptera; Sphaeroceridae; Limosininae), including *Kimosina* Roháček, new synonym and *Aubertinia* Richards, new synonym. Memoir of the Entomological Society of Canada. (In press.)
- McAlpine, J. F. 1981. Morphology and Terminology—Adults, pp. 9-63. In McAlpine, J. F. et al., eds., Manual of Nearctic Diptera. Volume 1. Research Branch Agriculture Canada Monograph 27.
- Papp, L. 1984. Family Sphaeroceridae, pp. 68-107. In Soos, A. and L. Papp, eds., Catalogue of Palaearctic Diptera. Volume 10. Akademiai Kiado, Budapest.
- Pitkin, B. R. 1988. Lesser Dung Flies (Diptera: Sphaeroceridae). Handbooks for the Identification of British Insects. Vol. 10, Part 5c. Royal Entomological Society, London. 175 pp.
- Richards, O. W. 1929. Systematic notes on the Borboridae (Diptera), with descriptions of new species of *Leptocera* (*Limosina*). Entomologist's Monthly Magazine 65: 171-176.
- . 1930. The British species of Sphaeroceridae (Borboridae, Diptera). Proceedings of the Zoological Society of London 1930: 261-345.
- . 1931. Sphaeroceridae (Borboridae). In Diptera of Patagonia and South Chile 6(3): 62-84. British Museum (Natural History): London.
- . 1963. Sphaerocerid flies from South and Central America in the collection of the California Academy of Sciences. Pan-Pacific Entomologist 39: 231-246.
- Roháček, J. 1982. Revision of the subgenus *Leptocera* (s. str.) of Europe (Diptera, Sphaeroceridae). Entomologische Abhandlungen und Berichte aus dem Staatlichen Museum für Tierkunde in Dresden 46: 1-44.
- . 1983. A monograph and re-classification of the previous genus *Limosina* Macquart (Diptera, Sphaeroceridae) of Europe. Part II. Beiträge zur Entomologie 33: 3-195.